

**Mr. Spear's Report to the Local Government Board upon
the Sanitary Condition and Administration of the
Rochester Urban Sanitary District.**

GEORGE BUCHANAN,
Medical Department,
June 18th, 1889.

Topography, Site, &c.—The Urban Sanitary District of Rochester covers an area of 2,906 acres, and contains a population estimated now at 23,000, being an increase of 1,693 over the enumeration of 1881. It is situated on either bank of the Medway 10 miles above the junction of that river with the Thames, but not far above where the river may be said to become an estuary of the sea. On the west bank, partly on a tongue of land formed by a bend of the river, stands the old Cathedral city; Strood is on the other bank immediately opposite, and the two outlying villages of Borstal and Frinsbury are situated, the one on the "Rochester side," a mile and a half from the city, on well-elevated sloping ground, and the other about three-quarters of a mile above Strood. On the Rochester or western side of the river the population is estimated at 15,000; on the Strood side, 8,000.*

On the east, that is, towards the estuary, the city adjoins the town of Chatham, and the urban district of Gillingham is situated still a little further below. On other sides Rochester is surrounded by rural areas.

Geologically the district stands upon the Chalk, but a number of houses near the river banks, and especially on the Strood side, are upon alluvial soil, or at Strood, upon "made" or artificial ground. Here the sub-soil water stands habitually some eight feet from the surface. From these low-lying localities the Chalk hills rise, and it is upon their slopes that the main part of the district is situated.

Until 1884 the low-lying parts of Strood, comprising a considerable proportion of the inhabited part of that division, was much liable to flooding from the river, and in that year the Sanitary Authority, aided by the Bridge Wardens, constructed embankments along the riverside and throughout the ramifications of a small creek, and thus prevented the overflowing. At present, it is said, only the cellars of individual houses exceptionally situated are liable to flooding, and cases of this kind are found on both sides of the river.

Sewerage and Drainage.—No regular sewerage exists in the district. Brick or earthenware-pipe highway drains have been constructed in the various parts, and in the low-lying districts overflow pipes from cesspools and privy-pits have been allowed to discharge into these channels; in addition to a few closets and slop-water drains which communicate directly with them. On the river banks and in the small creeks of the riverside I saw certain outlets of the channels spoken of; the liquid discharged bore all the appearances of ordinary crude sewage, and the mud around was deeply discoloured by sewage matter.

But for this partial exception sewage and slop-water are universally disposed of through the agency of cesspools and privy vaults, and their uncontrolled leakage. The excavations vary from 6 to 10 up to 20 feet in depth; and, made to penetrate the Chalk, are constructed in such a way that soakage from them may be facilitated. They are, indeed, regarded as failing in their purpose if emptying is often required, and this is the reason why in the low-lying alluvial districts overflows have come to be generally provided. Elsewhere it has often happened that when a cesspool has filled, the sinking

* As regards population, these are the estimates of the Medical Officer of Health. Those given me by the Clerk and by the Surveyor are considerably higher.

of a supplementary one, or the use for this purpose of some disused well (regardless perhaps of the fact that other neighbouring wells are not disused), has been preferred to the removal of the old accumulation. The soil on which the town lies has come, in short, to be honeycombed with cesspools and privy-pits; and the foundations of the very houses themselves must often be saturated with the resulting filth. Even in houses now being erected cesspools are sunk within a few feet of the house-walls.

Although the back yards of much of the cottage property of the district are very close and confined, this does not prevent the accumulation of enormous quantities of sewage beneath their surface. Many of the cottages, having no back windows or through communication, are dependent for ventilation from one quarter solely; and it might be thought that the air of this quarter—a space often much enclosed—would be protected with special care from avoidable sources of pollution. On the contrary, the space is generally chosen for the excavation of cesspools and privy vaults; and effluvia from the accumulated filth are constantly poured into the air the purity of which is of such vital importance. I will give a few instances that illustrate the surroundings of much of the cottage property, as well as the action taken by the Authority towards improvement:—

House in Pump Lane.—Small, much confined yard; surface dilapidated. Deep privy vault sunk against wall of house. Vault emptied about once in two years, and matter then conveyed through the passage (bricked) of the house. Slop-water drain, used by other property also, passes under the same passage, and is said to have been frequently stopped. Stench from the privy-pit much complained of in the dwelling. In January of this year a case of typhoid fever occurred in this house; the drain-gully, previously dilapidated, was then repaired, and a 3-inch ventilating shaft from beneath the privy-seat was erected.

Houses in Baker Street.—Of better class than that above, and inhabited by well-to-do artisans. Three invaded by typhoid fever in 1888–89; two in 1887; some diphtheria also. Situation well elevated; houses built about 14 years, but street still unmade. No backway to premises, and refuse matter has to be removed through houses. Slop-water conveyed to cesspools in small gardens; privy vaults close to the back of the houses, and privies just beneath side bedroom window. In one case vault not emptied for six years. Stench generally complained of; one tenant saying that the side bedroom above spoken of is uninhabitable from this cause. (The owners, I was informed, have had notice to remove the privies further from the houses.)

Houses in Morden Street.—Of same class as the last spoken of. One invaded by typhoid fever in 1888, one in 1887. Cesspool privies just outside kitchen door. “Smell in summer and before rain unbearable.” Some of the old wells converted into supplementary cesspools; others still supplying water for drinking and every household purpose, although said to be full of animalculæ in the summer.

Pelican Yard, Strood.—Houses of three stories, but very tiny rooms. Yard space at back a mere passage enclosed by high walls. Privy-pits sunk here against the house-walls; an overflow from the slop-water cesspool passes, it is said, beneath one house, and in that (where children are now suffering from scarlet fever) “fearful smells” are complained of.

Bull’s Square.—Arrangements there somewhat similar. Drain beneath house, coming from privies, likewise complained of.

Medway Cottages.—Direct communication between the kitchens and the overflow pipe (which forms a sort of elongated cesspool) from the privies. Stench in the houses said to be “cruel.”

Taylor’s Lane.—Enclosed back premises; wash-houses within few feet, in one case within three feet, of back doors, and doors immediately opposite. Privy-pits (not emptied for 12 months) within the wash-houses. Ashes and house refuse deposited on unpaved surface in front of the houses. Stench from the privies in the wash-houses pervades the dwellings.

Thompson’s Buildings, City.—Tiny houses of three stories, no back ventilation. In front, a passage 10 feet wide enclosed by high walls except at the entrance. At the end of this passage large privy pits and two cesspools. In wet weather liquid can be heard overflowing from one to the other and stench abominable. Overflow said to connect one cesspool with a sewer.

Almond Place, High Street.—Some of the houses here have out-door closets connected directly with the sewer (highway drain), one at least without the intervention of any pan or other trap. Others have privies, with vaults beneath, built against the kitchen walls. In the latter case the stench is said to be unbearable in the summer, and in two houses ill-health of the inmates was attributed to this cause.

Ironmonger Lane and Garden Row form, with several little branch rows, an area, some 50 yards deep, behind the High Street. It is confined and crowded, and abounds in dwellings that, from structural condition and the nature of surroundings, are unfit for habitation. Many of these dwellings have space only at one side, this space being largely occupied by privy-pits having untrapped overflows to the common sewer, by cesspools, &c.; and many that would otherwise be more open are surrounded and hemmed in by these avoidable sources of atmospheric pollution. Several of the inhabitants complain of injury to health from their surroundings, and the place is said to have been often inspected by the sanitary officials with a view to some improvement. So far as I could learn, however, only one alteration had been effected. In one small and much enclosed space a privy-pit had been removed and watercloset with cesspool substituted. The new cesspool (10 feet deep) was sunk within some 4 feet of the main wall of the dwelling-house; and it so happens that on another side of this same house, within about 9 feet of the door, and in a narrow passage, a large foul privy-pit, built right against the kitchen wall of a second house, is still left.



Such is the condition of a large proportion of the older cottage property in the town; and that of the newer property, as regards this matter of excrement disposal, is scarcely more satisfactory. At the village of Borstal, where several rows of dwellings have been erected within the last few years, large cesspools and privy vaults, generally unventilated and always leaky, are sunk in the Chalk often close by the foundations of the houses. I saw houses being built, with excavations of this kind within some 12 feet of the house-walls. In this village of Borstal there have been recurring outbreaks of typhoid fever during the last four years; during the last two there have been at least seven family invasions; an epidemic of scarlatina occurred in the autumn of 1888, and there have been besides several cases of "diphtheritic sore throat." The village is situated on a steep hillside overlooking the Medway; the houses are, for the most part, new and airy, and the water supply is from the public source. I could find no explanation for the undue prevalence of typhoid fever, but that of the exceedingly unsatisfactory arrangements for sewage disposal; and certain of the cases of sore throat also had occurred in houses where the invasion of cesspool and drain-air was much complained of.

Many villa residences have been built in different parts of the district of late years, and for these also cesspools afford the only means of sewage disposal. In these cases the distance of the cesspools from the houses is somewhat greater, and more attention is paid to the ventilation of the drains. That a cesspool, however, should be water-tight is never required.

The byelaws of the Authority date back to 1876, or before the model byelaws of the Board were issued. The materials to be used in the construction of drains, cesspools, and the like, the means of ventilation, the situation of cesspools and closets, &c., are to be "suitable," but definite regulations in respect of these important matters being wanting the result is as described.

Removal of Refuse.—Until June 1888, the emptying of privies and cesspools was left to owners or occupiers. It is said that the supervision exercised by the sanitary officers was sufficient to prevent the actual overflowing on to the surface of sewage matter; but in several cases, as stated, the digging of supplementary cesspools, or the use for this purpose of some disused well, was resorted to with a view of obviating the need for frequency of removal. In September 1887, the Board issued a compulsory Order under section 42 of the Public Health Act, 1875, requiring the Local Authority themselves to undertake or contract for the cleansing of cesspools and privies, and by the end of the following June the Authority had, by entering into contracts, completed their arrangements for compliance with this Order. It cannot be doubted that the change will serve an economical purpose, as the cost to the private owner of emptying a cesspool was excessive; it may be expected too that the temptation to dig supplementary cesspools for the same property will, in large measure, be removed, and that the final disposition of the long stored-up filth will be effected with less difficulty and danger. Further than this no advantage can be looked for; enormous masses of filth will still be stored just beneath the surface in the immediate vicinity of dwellings; the foundations of the houses will continue to receive the soakage of sewage; the ground air, which largely enters into the composition of the air of dwellings built on the Chalk, will still be impregnated with sewage effluvia; and at recurring intervals, which will be the more frequent according to the frequency of the scavenging, a dangerous and offensive disturbance of filth about the doors and windows of dwellings, at times involving the carrying of such filth through those dwellings, will have to be endured.

As to this last difficulty, however, there is evidently no more disposition on the part either of the Authority or the contractors, than there was before on the part of owners, to empty these receptacles until their emptying is imperatively called for by threatened overflow. Already, on different occasions, when complaint has been made and the emptying demanded, this has been refused because the cesspools or privy-pits, as the case may be, were "not sufficiently full." From June 26th, 1888, to March 12th, 1889, 306 cesspools or privy-pits are reported to have been emptied by the public scavengers; and the amount of matter so removed appears to have averaged some six tons from each of the several premises, and to have ranged from about two to

18 tons. The figures sufficiently indicate the enormous extent of these accumulations about dwellings.

The only real remedy for the state of things disclosed must, in fact, be looked for in another direction, namely, in the proper sewerage of the district and the abandonment of the cesspool system. The necessity of provision for sewerage has from time to time been pressed upon the attention of the Authority by the Board, and in July 1887 the Authority, in response to the Board's representations, endeavoured to open negotiations with the local authorities of Chatham and Gillingham—districts just below Rochester—with a view to the consideration of a joint sewerage scheme. The replies received to these overtures were not favourable, and thereupon the matter fell into abeyance. It is difficult to find sufficient reason for this paralysing effect of declined co-operation. Very probably the three urban districts on this portion of the Medway will ultimately find it advantageous to combine in the provision of outfall sewerage works; but, meanwhile, no sufficient reasons have been adduced why Rochester should delay the execution of its own proper plans. Delay is unquestionably injurious to the health and prosperity of the city.

The removal of ashes and house refuse has been undertaken by the Authority since 1885, and is carried out with fair regularity at fortnightly intervals. Fixed covered receptacles are now generally provided for the deposit of this matter during the intervals of removal, but loose heaps are still occasionally observed on unpaved surfaces.

Roads, Surface Cleanliness.—Considerable attention has been paid to the improvement of the main roads of the city, but many of the cross streets and back lanes and alleys are unmade or dilapidated. A considerable amount of "private improvement work," under section 150 of the Public Health Act, is required.

Water Supply.—The district is supplied from two public sources. On the Rochester side of the river the mains of the Brompton, Chatham, and Rochester Company are available; on the Strood side, waterworks (purchased of the Strood Company in 1881) are in the hands of the Sanitary Authority. Both supplies are obtained from wells and adits sunk in the Chalk, in situations outside town limits. The water is reported to be wholesome and plentiful; each service is now on the constant system, and adequate pressure is maintained.

In one important respect the house services need alteration. In very many cases at Strood, and in a few in Rochester, I found waterclosets supplied direct from the mains; *i.e.*, without the intervention of any cistern or tank. The danger of insuction of air, and even of solid matter, into the water pipes from closet pans, during any temporary discontinuance of water pressure, is well known to attend this objectionable arrangement.

A number of houses in the district are still dependent upon local sources of water supply. It would appear that on the Rochester side about 125 wells are still in use, and about 10 in Strood. Since 1885, 53 wells have been closed by the Authority, in most cases after chemical analysis has shown the water to be dangerously polluted. Those that remain are sunk in the Chalk, and having regard to the universality of leaky cesspools and privy-pits, it may be doubted whether the wholesomeness of the water that any of them afford (although chemical analysis may have afforded only negative results) can be relied upon.

House Accommodation.—From what has already been said it will be clear that much additional attention is required to the cottage property of the district. Many of the cottages are exceedingly small and confined and ill-ventilated; and many in the older parts of the town are dilapidated, damp, and dirty; some few are overcrowded. In certain areas the provisions of the Artizans and Labourers Dwellings Acts should be applied; and in many individual cases application should be made to the Justices to close houses pending such structural improvement as will render them fit for habitation. It is said that of late years one or two of the worst courts have been dismantled owing

to the extension of business premises or the like, but very little, if any, action in this direction appears to have been taken by the Authority.

Provision against Infection.—In conjunction with the Chatham Urban Sanitary Authority an isolation hospital, used also by the Rochester Port Sanitary Authority, was provided towards the close of 1883. It is situated about a mile and a half from the centre of the city, and consists of two ward pavilions, with means in each for the separation of the sexes. The accommodation it affords, for some 32 patients in all, must be regarded as somewhat meagre for the population it is intended to serve, but the Authority are alive to the possible necessity of temporary extension. It has evidently done much good service, and the inhabitants of the city are said now to accept eagerly the advantages it offers. In his annual report for 1885 the Medical Officer of Health states that 60 cases were removed to this hospital during the year from the Rochester district alone—38 cases of scarlatina, 9 of diphtheria, 9 of enteric fever, and 4 of small-pox—and that after removal of the initial sufferer no spread of the disease occurred in any case. In 1888 and the first two months of 1889, 77 patients from this district were thus isolated.

There is no organised system of notification of infectious disease in the district, and it is believed that many cases escape the attention of the sanitary officers. Where discovered, in addition to the removal of the sufferers as often as possible to the hospital, disinfectants are supplied gratuitously, and occasionally houses are disinfected by the sanitary officials. A hot-air disinfecting chamber (Ransom's) is provided on the hospital premises.

The number of small seafaring craft entering the Port of Rochester exposes the town no doubt to some danger from the importation of contagious disease. The waters at the mouth of the Medway, and in the Thames below, are within the jurisdiction of the Port of London, and infected vessels from abroad entering the port would be liable to detention there. The town council acts as Port Sanitary Authority for Rochester, and the Medical Officer of Health for the city holds the same office for the port. Two "conservancy" officers are retained as inspectors of nuisances, and they, it is said, exercise supervision for the purpose of the discovery of any infectious disease on ship-board. Barges are registered and inspected.

Administration.—The Medical Officer of Health, Dr. Sladen Knight, is not appointed under the Board's Order, and copies of his reports are not forwarded. He receives a salary of 50*l.* per annum. Various improvements have evidently been forwarded by him. The embankment of the river to prevent flooding at Strood, the periodical removal of house refuse, the provision of a constant in place of an intermittent water service at Strood, the gratuitous treatment of patients at the fever hospital, are amongst the measures advocated by him in his reports and since adopted by the Sanitary Authority. No formal representations have yet been made to the Authority under the Artizans and Labourers Dwellings Acts, nor any of importance as to houses unfit for habitation. In the all-important matter of disposal of excrements there may have been some want of insistence in specific advice; nevertheless, I cull the following from his reports:—

In 1879 certain cases of typhoid fever are attributed to defective privy accommodation, and "several cases of illness of a non-infectious character at Herbert's Cottages, Strood, are caused by the bad smells arising from defective privy arrangements." In 1880 two cases of typhoid fever in John Street are reported as "probably due to the saturation of the soil from cesspools," and in another report of the same year the necessity of improved drainage is referred to. In 1882 "many cases of typhoid fever" are reported, and "the chief element of danger and the grand source of the outbreak has arisen from a soil saturated from overflowing cesspools owing to excessive rainfall, and until the cesspool system is replaced by efficient drainage this will be always liable to recur." In the first half of the following year enteric fever is again reported as "prevalent to a considerable extent in the Medway Division, although only three deaths have occurred." In 1887, "I look forward to the period when through a well-devised system of drainage the receptacles for filth now abounding in our midst, sources of many ailments with which the population is afflicted, may be known only as evils of the past; and that cases of typhoid fever, due in great measure to the pollution of the air and the water by this accumulation of filth, may become rarer than they have hitherto been, if not altogether disappear; and I beg earnestly to commend to your consideration the desirability of carrying out these works from which so great benefits may be confidently expected."

There are two inspectors of nuisances. One, who is in feeble health, receives a salary of 52*l.* per annum. The other was, I am told, mainly appointed to superintend the scavenging operations, and certainly devotes the greater part

of his attention to this work. He is an active officer, and in receipt of a salary of 78*l.* per annum.

Vital Statistics.—The collection of reliable mortality statistics is a matter of more than common difficulty in Rochester. Not only are the registration districts not conterminous with sanitary areas, but there are within the city certain small public and charitable institutions receiving inmates both from Rochester and from extra urban localities. The union workhouse for the larger (Rochester) division is, moreover, outside the district; and then, again, there is within it the convict prison at Borstal (which accounts for some 700 of the population), as well as vessels in the port, each and all of which contain individuals amongst whom the death rate, compared with the general population, is naturally low. The Medical Officer of Health usually calculates the death rate from all causes, first from the number registered as having occurred in the district, and then from this total number minus all those that, whether belonging to Rochester or not, have occurred in “public institutions” (as the term is defined by the Registrar-General). It will be seen that this latter plan excludes many deaths amongst persons belonging to Rochester; and that the other, while it includes certain deaths that more properly belong to the Chatham bills of mortality, takes no account of deaths that occur in the workhouse belonging to the largest division of Rochester, no account of cases that may be removed to London hospitals, nor of the presence (in the prison and on shipboard) of a considerable “picked” population. These considerations have to be borne in mind in studying the Medical Officer of Health’s returns, reproduced in Table 2, appended.

From what has already been said it will have been gathered that enteric fever and diphtheria have shown from time to time some prevalence in Rochester. The cases of these diseases, and of scarlatina and small-pox, that have come to the knowledge of the Sanitary Officers in recent years are stated, so far as information allows, in Table 1, appended.

JOHN SPEAR.

TABLE I.—CASES recorded by Sanitary Officers as having occurred in Rochester U.S.D.

Year.	1884.	1885.	1886.	1887.	1888.	1889 (3 months).
Enteric fever - -	10	3	9	37	5	6
Scarlatina - - -	44	2	2	15	40	21
Diphtheria - - -	9	20	4	3	6	—
Small-pox - - -	4	20	—	—	1	—

TABLE II.

[NOTE.—This table must be considered in view of conditions affecting mortality returns of Rochester U.S.D., stated in the last paragraph but one of the Report.]

Year.	Births.		Total Deaths.		Deaths, exclusive of those in public Institutions.		Infant Deaths (under 1).		Seven principal Zymotic Diseases. (Deaths.)	
	Number.	Rate per 1,000 of Population.	Number.	Rate per 1,000.	Number.	Rate per 1,000.	Number.	Per 1,000 Births registered.	Number.	Rate per 1,000.
1878 - -	671	36.5	434	23.6	360	19.6	107	159	?	?
1879 - -	689	37.5	417	22.7	346	18.8	77	112	23	1.3
1880 - -	682	36.9	471	25.5	383	20.8	96	155	83	4.5
1881 - -	701	33.7	382	18.3	313	15.0	82	117	36	1.7
1882 - -	688	32.8	446	21.2	350	16.7	95	138	44	2.1
1883 - -	724	34.0	422	19.8	341	16.0	96	132	37	1.7
1884 - -	716	33.3	448	20.8	363	16.8	137	191	70	3.2
1885 - -	737	33.2	411	18.5	321	14.4	91	123	45	2.0
1886 - -	752	33.4	414	18.5	350	15.4	87	115	36	1.6
1887 - -	748	32.7	424	18.6	338	14.8	113	151	52	2.3
1888 - -	751	32.6	394	17.3	304	13.2	84	112	35	1.5
Mean of years -	—	34.2	—	20.4	—	16.5	—	137	—	2.2

